

Summer 2011

Jefferson Alumni Bulletin – Volume 60, Number 3, Summer 2011

Let us know how access to this document benefits you

Follow this and additional works at: http://jdc.jefferson.edu/alumni_bulletin

 Part of the [History of Science, Technology, and Medicine Commons](#), and the [Medicine and Health Sciences Commons](#)

Recommended Citation

"Jefferson Alumni Bulletin – Volume 60, Number 3, Summer 2011" (2011). *Jefferson Medical College Alumni Bulletin*. Paper 293.

http://jdc.jefferson.edu/alumni_bulletin/293

This Article is brought to you for free and open access by the Jefferson Digital Commons. The Jefferson Digital Commons is a service of Thomas Jefferson University's [Center for Teaching and Learning \(CTL\)](#). The Commons is a showcase for Jefferson books and journals, peer-reviewed scholarly publications, unique historical collections from the University archives, and teaching tools. The Jefferson Digital Commons allows researchers and interested readers anywhere in the world to learn about and keep up to date with Jefferson scholarship. This article has been accepted for inclusion in Jefferson Medical College Alumni Bulletin by an authorized administrator of the Jefferson Digital Commons. For more information, please contact: JeffersonDigitalCommons@jefferson.edu.

Join the Celebration!

In 1961, JMC opened its doors to female students for the first time. Since then, JMC has increased its representation of female students, faculty members and senior leaders to be on par with national standards or better. In the coming years, we look forward to making even greater contributions to advancing the status of women in medicine. In honor of this milestone, JMC is planning a year of celebrations. Mark your calendar for these events and look for news of more to come!

Alumni Weekend

September 23 – 25

FRIDAY, SEPTEMBER 23

CME: Focus on Women's Health

Open to all alumni
8 a.m. to 4 p.m.

- Prevention and Wellness Checklist for Women; *Richard Wender, MD*
- Venous Thromboembolism: Prophylaxis and Treatment in Women; *Geno Merli, MD*
- Approaches to Healthy Aging; *Christine Arenson, MD, and Joseph Montella, MD*
- Heart Disease in Women; *Danielle Duffy, MD*
- Superfoods: Can They Really Prevent Disease?; *Cheryl Marco, RD, LDN, CDE*
- Exercise for Women: How To Do It Effectively and Safely; *Marc Harwood, MD*

- Breast Cancer in Women; *Tiffany Avery, MD*
- Alternative and Complimentary Approach to Wellness in Women; *Birgit Rakel, MD*

Jefferson Medical College of Thomas Jefferson University is accredited by the ACCME to provide medical education for physicians.

Alumni Reception

Private showing of *The Gross Clinic* and presentation of the Alumni Achievement Award
5:30 p.m. to 7:30 p.m.

SUNDAY, SEPTEMBER 25

"Celebration of Women"

Alumni Brunch / Silent Auction

10 a.m. to 1 p.m.
Ritz-Carlton

50 & Forward Celebration Weekend

October 28 – 29

Presentations by notable women, including:

- Vivian Pinn, MD, director of the NIH Office of Research on Women's Health
- Christine Cassel, MD, president and CEO of the American Board of Internal Medicine and the ABIM Foundation
- Virginia Valian, author of *Why So Slow?: The Advancement of Women*

- Christine Laine, MD, first female editor of the *Annals of Internal Medicine* and a Jefferson faculty member
- Members of the 1965 class, the first to include women

SATURDAY, OCTOBER 29

Reception

6 p.m. to 8 p.m.



Amilu S. Martin, MD '65, and Nancy S. Czarnecki, MD '65

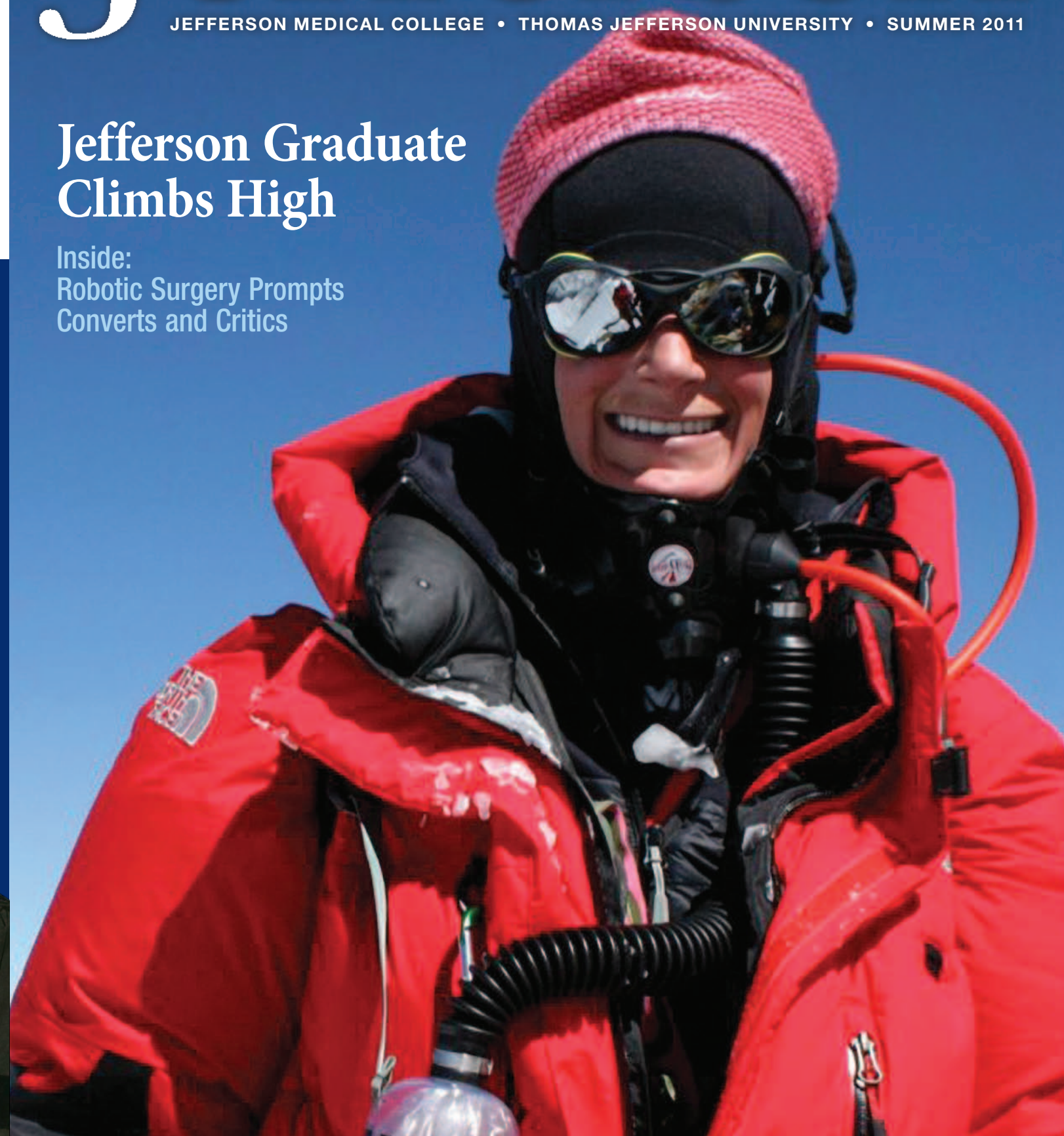
Jefferson

ALUMNI BULLETIN

JEFFERSON MEDICAL COLLEGE • THOMAS JEFFERSON UNIVERSITY • SUMMER 2011

Jefferson Graduate Climbs High

Inside:
Robotic Surgery Prompts
Converts and Critics



Message from the President



Robert L. Barchi, MD, PhD

Viewed from afar, the United States appears to have a surfeit of medical riches. We spend nearly \$8,000 per person on health care annually – more than twice the per-person amount in France and Japan. Yet the average life expectancy of an American is only 78. That's three years less than the average life expectancy in France and four years less than the average in Japan. Our infant mortality rate is 6.5 deaths per million people in the United States, compared to 3.8 deaths per million in France and 2.6 deaths per million in Japan.

Our inability to control the utilization of medical services threatens our basic economic and public health. We're on track for total U.S. healthcare spending to reach nearly 20 percent of the nation's GDP by 2019. Yet it's difficult to rein in costs when patients believe they're entitled to every available service, when massive investments in medical marketing obscure what's clinically best for the patient and when physicians are paid for volume of services rather than positive outcomes.

What does all this mean for Jefferson? Amid the spending frenzy, we need to maintain a clear focus on doing what's best for patients and on strengthening our institutional vitality. We must support nascent efforts to align provider incentives with positive health outcomes and cost savings. And

we must be a leader in using technology to serve better decision-making, coordinated care and common sense.

In isolation, the most advanced technology doesn't automatically improve clinical outcome, and it certainly doesn't trump thoughtful integration of all available care options. For example, survival rates five years after diagnosis with high-risk, locally advanced prostate cancer are near 90 percent for patients treated at Jefferson's Kimmel Cancer Center's multidisciplinary clinic, compared to 78 percent among patients nationally. This finding was published in the *Journal of Oncology Practice* last fall. According to Leonard G. Gomella, MD, the Bernard W. Godwin Jr. Professor and Chair of the Department of Urology, Jefferson prostate patients live longer specifically because our surgeons, medical oncologists, radiation oncologists and other specialists work effectively as a team to refine each patient's treatment plan.

Robotic surgery for prostate patients provides a good example of our national difficulties. Look beyond the marketing hype, and you'll see that independent research is evenly split on whether it's worth the extra cost, an estimated \$1,500 to \$5,000 more per patient. There is no clinical consensus on whether robotic surgery offers superior outcomes in cancer control, continence preservation and impotence prevention. While 80 percent of the patients who had prostatectomies at Jefferson last year chose robotic surgery, another 20 percent of patients opted for the more traditional approach in the hands of an experienced surgeon.

Hospital marketing pitches might similarly persuade prostate patients to obtain a \$40,000 proton beam therapy treatment instead of standard intensity-modulated radiation, which costs \$23,000, yet there is little published independent research that supports the therapeutic superiority of proton beam therapy over IMRT in adult patients.

In the United States there are currently seven proton therapy centers, and another 10 are scheduled to open in the next decade. The \$200 million investment required to build

a proton therapy facility – along with the 25- to 30-person staff needed to treat a single patient – triggers a 'feed the beast' mentality. Because prostate cancer is so prevalent, profitability requires recruiting prostate patients for proton beam therapy. Meantime, Adam P. Dicker, MD, PhD, chair of the Department of Radiation Oncology, says Jefferson's patients are equally well served by the \$3 million linear accelerator that we use for IMRT for prostate and a wide range of other cancers.

Too many U.S. hospitals are deeply engaged in a medical-technology arms race. For example, they are buying CT scanners with ever-higher slice numbers, jumping from 64-slice machines to 256-slice and even 320-slice machines, each carrying a major capital investment and significantly higher cost per test. Yet no one has been able to demonstrate a significant increase in lives saved when the newest and most expensive scanner is used.

Although Jefferson Hospital has the highest-end equipment, including a 256-slice CT scanner, Vijay M. Rao, MD, the David C. Levin Professor and Chair of the Department of Radiology, says that the department also offers other models that may be more appropriate for a given clinical situation. She plans to institute decision-support systems linked to order entry that will enable Jefferson doctors to make informed decisions about which imaging modality to use based on clinical evidence. This ready access to point-of-care information about imaging will help physicians recommend the most appropriate course of treatment and avoid unnecessary tests – saving time and expense for patients, doctors and health care administrators.

That's the kind of technology innovation that makes sense for our patients and our economy.

Sincerely,

Robert L. Barchi, MD, PhD
President
Thomas Jefferson University

Contents

FEATURES

6 Scalpel, Forceps, Joystick: Surgeons Turn to Robots for Minimally Invasive Procedures

12 Feeling Ill? There's an App for That

16 Splendid Vindication: W.W. Keen and the Secret Operation on Grover Cleveland

20 The Importance of Empathy: Research

DEPARTMENTS

2 DEAN'S COLUMN

4 FINDINGS
OTC Supplement Fights Cancer

22 FACULTY PROFILE
Marion Siegman, PhD: Flexing Academic Muscles

24 STUDENT PROFILE
Erin Lally: On Top of the World

26 ON CAMPUS

30 CLASS NOTES

32 ALUMNI PROFILE
Col. Harlan M. Walker II, MD '00: Protecting Patients in the Air and Under the Sea

34 IN MEMORIAM

37 BY THE NUMBERS



Jefferson Alumni Bulletin
Summer 2011
Volume 60, Number 3

Senior Vice President,
Jefferson Foundation: Frederick Ruccius

Interim Editor: Karen L. Brooks

Design: JeffGraphics

Bulletin Committee
William V. Harrer, MD '62 *Chair*
James Harrop, MD '95
Cynthia Hill, MD '87
Larry Kim, MD '91
Phillip J. Marone, MD '57, MS '07
Joseph Sokolowski, MD '62

Quarterly magazine published
continuously since 1922

Address correspondence to:
Editor, *Alumni Bulletin*
Jefferson Medical College of
Thomas Jefferson University
925 Chestnut Street, Suite 110
Philadelphia, PA 19107-4216

215-955-7920
Fax: 215-503-5084
www.jefferson.edu/jmc/alumni/bulletin.cfm
Alumni Relations: 215-955-7751

The Jefferson community and supporters are welcome to receive the *Alumni Bulletin* on a regular basis; please contact the address above. Postmaster: send address changes to the address above. ISSN-0021-5821

JG 11-2512



The Dean's Column

In June, Dean Mark Tykocinski, MD, shared the following comments with Jefferson Medical College graduates at Jefferson's 187th commencement ceremony. His remarks to those 251 graduates appear here, adapted, in lieu of his usual column.

As graduates of Jefferson Medical College, you will touch the lives of human beings who will be grateful for your skills, take for granted your good intent and trust your judgment. Your futures hold opportunities to provide compassionate care, discover cures and train the next generation of caregivers.

Your journeys will take you to places that you cannot yet imagine. One of your classmates, Erin Lally, provided us with a glimpse of the dizzying heights to which some of you may ascend as your lives unfold (see page 24). Erin began mountain climbing in 1992 when her family moved to Colorado. An aspiring gymnast, she was drawn to the idea of using one's own physical strength to propel up sheer granite faces. Erin started to "play in the mountains" (her words) as Colorado peaks ultimately gave way to Mont Blanc, the Matterhorn and other technical mountains of the Alps. Graduating Georgetown a semester early, Erin participated in her first Himalayan expedition, achieving her goal of reaching Camp II on Mount Everest at a 22,000-foot elevation. Overlooking the vast Khumbu Icefalls, Erin promised herself that she would one day return to summit Everest. So the Bolivian Andes became her playground. She summited six 18,000–20,000-foot peaks in a 10-day training period.

Then, armed with three and a half years of Jefferson Medical College under her belt,

Erin returned to the Himalayas and realized her dream, ascending Mount Everest in May (up the Lhotse Face, the Yellow Band, the Hillary Step) and raising Jefferson's banner on Everest's summit.

This story echoes one I relayed to our graduates a year ago about David Simons, Class of 1946, who is widely acknowledged for having set the stage for the space age. A physician-turned-Air-Force-officer, Simons paved the way for the Mercury space program by studying the hazards of weightlessness and cosmic radiation in the upper atmosphere. Simons ultimately became the subject of his own research when in 1957 he was propelled in an air-conditioned capsule the size of a telephone booth to nearly 102,000 feet – breaking the human altitude record (Erin, don't get any new ideas!). In 32 hours and 10 minutes aloft, this JMC alumnus proved that human beings can survive at the edge of space and enshrined himself as a pioneer of aviation medicine.

Our medical students and graduates have indeed proven their spirit, as they ascend to dare-devil heights and claw up mountain faces. A Jefferson medical student sees a face, in this case a rock face, and sees in it something more – a conduit to personal fulfillment, a way of affirming the agency that resides within each of us – actively taking charge, not the passive victim of circumstance, tackling the faces of even the tallest of mountains.

But there are other faces of significance to the Jefferson graduate.

Some of our alumni have been busy implanting new faces, literally. E.J. Caterson, Class of 2003, along with his wife, Stephanie Houser Caterson, Class of 1999 and former Jefferson surgery resident, were in the news

this spring, big time. Harvard's Brigham and Women's Hospital trumpeted success in the first full face transplant performed in the United States – a remarkable surgical achievement in which E.J. was lead surgeon and Stephanie assisted in key microsurgical steps. Through this facial transplant milestone, E.J. and Stephanie enabled a 30-year-old Texas man, critically burned in a high-voltage power line accident, to reintegrate back into the world. They gave him a new face – a new life.

Jefferson graduates don't just claw up mountain faces. Sometimes they create new faces, knowing that brightening a face can brighten the human soul beneath.

Sometimes our students and alumni choose to consciously ignore the face altogether and head straight to that which lies behind it. I believe that the community outreach endeavors of our students is of a scope that is second to none – JeffMoms, JeffCAT, JeffYES, Jefferson Ambassadors, Jefferson Clowns for Medicine, Jeff Cares for Kids, Give Kids Sight Day, JeffEarth, JeffHEALTH, JeffHELP, JeffSOAR, JeffSEAL – the list is remarkable and goes on and on.

And then there is the showcase of Jefferson's outreach activities: JeffHOPE. In May, I had the privilege of handing our JMC Community Service Award to Lara Weinstein, a family medicine faculty member, who in her student days co-founded JeffHOPE – a student-led and run program that provides medical care and patient advocacy to Philadelphia's homeless.

On a bitterly cold evening this past February, I had the opportunity to set foot at one of our six JeffHOPE sites. Walking into the shelter just two miles from magnificent Verizon Hall, the site of Jefferson's graduation ceremony, one

"The patient comes first – the dean comes second. His response was reflexive – not calculated, nor contrived: elevate the patient above all."

enters a completely different universe where poverty and disenfranchisement are etched on every face. Casey Roeder, one of our second-year JeffHOPE advocates, guided me up the creaking stairwells and through dimly lit, paint-peeled hallways to where JeffHOPE had set up shop: an impromptu clinic consisting of a single room partitioned by hanging sheets into separate treatment areas. Before me stood 12 or so bright-eyed Jefferson students and residents, listening attentively as a fourth-year medical student, Christine Feldmeier, ploughed through marching orders for the evening. Christine is among six of her class' JeffHOPE directors – Elizabeth Daly, Aldo Londino, Janae Heath, Caroline Gagel-Goodchild, Aprajita Mattoo and Kenneth Hemba. For Christine, this was a 'family affair,' since one of those standing there that evening was her sister, Rebecca, a first-year Jeff med student, readying herself to pick up the family JeffHOPE baton.

After an hour or so of witnessing this marvelous orchestration of caring and healing, I realized I was becoming more of a distraction than a help. So I looked for Casey, who might usher me out the maze of hallways and stairways. I spotted him down the hall, tending to a patient – and this is in fact where the real message begins. On approach, I took a double-take as I overheard him, a mere 'second-year,' talking to an elderly man about his facial rash – with an air of confidence and empathy rivaling that of any seasoned Jefferson attending. Was this really just a second-year med student?

I caught Casey's eye, motioned him aside and quietly asked if he would show me out the building. He responded politely, but emphatically: "Sure – but you'll have to wait – I first need to finish up with my patient." In that simple phrase, Casey encapsulated all that is wonderful about our medical school. The patient comes first – the dean comes second. His response was reflexive – not calculated, nor contrived: elevate the patient above all. What made this especially poignant was that he was looking at a patient with the most down-trodden of faces. Yet all this student saw

was that which lay beneath – a human being with dignity. The patient trumps all else, even the dean of one's own medical school.

Our students and graduates tackle mountain faces to affirm human agency. They implant new faces to unleash inner human beauty. They ignore the destitution and blemishes of faces as they tunnel directly to the humanity that lies beneath. From Everest, to the surgical suites of the Brigham, to the homeless shelters of north Philadelphia – 'faces' simply serve as conduits to higher values, as gateways to human spirit and worth. As physicians, we read faces, we sometimes work on faces – but what we should aspire to do is look beyond the faces.

Our graduates do not need to climb Everest, nor ascend to the edge of space, nor do magic with ultra high-tech facial transplant procedures to leave a meaningful imprint on those whose lives you touch. Simply walking into a homeless clinic and touching the shoulder of someone whom society has cast aside achieves the very same end.

One last dimension to the 'face' metaphor: in the physician-to-patient face-to-face, there are in fact two faces in play – that of the patient, but equally important, that of the physician. This face-to-face encounter must be completely open and mutual.

In a remarkable collection of essays entitled *Intoxicated by My Illness*, the late Anatole Broyard, a 40-year veteran editor and essayist for *The New York Times*, grappling with advanced prostate cancer, eloquently painted an image of his dream doctor. His essays are teeming with quotable phrases about the model physician-patient relationship. But I'll confine myself here to just one quote that touches on openness of the physician-patient interface.

In Broyard's words: "Not every patient can be saved, but his illness may be eased by the way the doctor responds to him – and in responding the doctor may save himself. It may be necessary to give up some of his authority in exchange for his humanity ... In learning to talk to his patients, the doctor may

talk himself back into loving his work. He has little to lose and everything to gain by letting the sick man into his heart."

'Give up some of his authority in exchange for his humanity,' 'letting the sick man into his heart' – the physician bravado, the face of invincibility – all must be peeled away if the physician is to truly interface with the patient. In the face-off with the patient, the caregiver must not simply search for the patient's humanity, but must also be willing to reveal his own. Empathy is as powerful a drug in our armamentarium as are the pills we prescribe. But we must constantly remind ourselves that true empathy is bi-directional and demands parity in the caregiver-patient face-to-face.

You, the generation that will be operating in this age of healthcare reform – with its increasing imposition of economics into the fragile physician-patient relationship and an ever-shrinking window of time allotted to the physician-patient encounter – should not lose sight of the residual power no one can take away: the ability to truly heal by seeing beyond patients' faces and making your own faces penetrable.

There is a common thread in these anecdotes. Female students and graduates were embedded throughout: climbing Everest, performing microsurgery at the Brigham, co-founding and leading JeffHOPE clinics. Donna E. Shalala, PhD, president of the University of Miami and the longest-serving U.S. Secretary of Health and Human Services in history, was our honorary degree recipient this year. This is a landmark year in which we celebrate the 50th anniversary of the first women to matriculate at JMC. Back in 1961, JMC re-faced itself, by admitting its first women. The dividends to our institution and society at large have continued now for 50 years unabated.



Mark L. Tykocinski, MD
Anthony F. and Gertrude M. DePalma Dean
Jefferson Medical College

Findings

OTC Supplement Fights Cancer

Jefferson researchers have uncovered genetic evidence suggesting the antioxidant drugs used to treat lung disease, malaria and even the common cold can also help prevent and treat cancers because they fight against mitochondrial oxidative stress — a culprit in driving tumor growth.

For the first time, the researchers show that loss of the tumor suppressor protein Caveolin-1 (Cav-1) induces mitochondrial oxidative stress in the stromal micro-environment, a process that fuels cancer cells in most common types of breast cancer.

"This means we need to make anti-cancer drugs that specially target this type of oxidative stress," said lead researcher Michael P. Lisanti, MD, PhD, professor of cancer biology at Jefferson Medical College of Thomas Jefferson University and member of the Kimmel Cancer Center at Jefferson. "And there are already antioxidant drugs out there on the market as dietary supplements, like N-acetyl cysteine."

The findings were published in the online Feb. 15 issue of *Cancer Biology & Therapy*.

Lisanti's lab previously discovered Cav-1 as a biomarker that functions as a tumor suppressor and is the single strongest predictor of breast cancer patient outcome. Knowing Cav-1's role in oxidative stress and tumor growth, Lisanti's lab set out to discover where that stress originates and its mechanisms.

Using a genetically tractable model for cancer-associated fibroblasts, the researchers found that the loss of Cav-1 increases mitochondrial oxidative stress in the tumor stroma, increasing both tumor mass and tumor volume by four-fold without any increase in tumor angiogenesis.

"Antioxidants have been associated with cancer reducing effects — beta carotene, for example — but the mechanisms, the genetic evidence, has been lacking," Lisanti said. "This study provides the necessary genetic evidence that reducing oxidative stress in the body will decrease tumor growth."

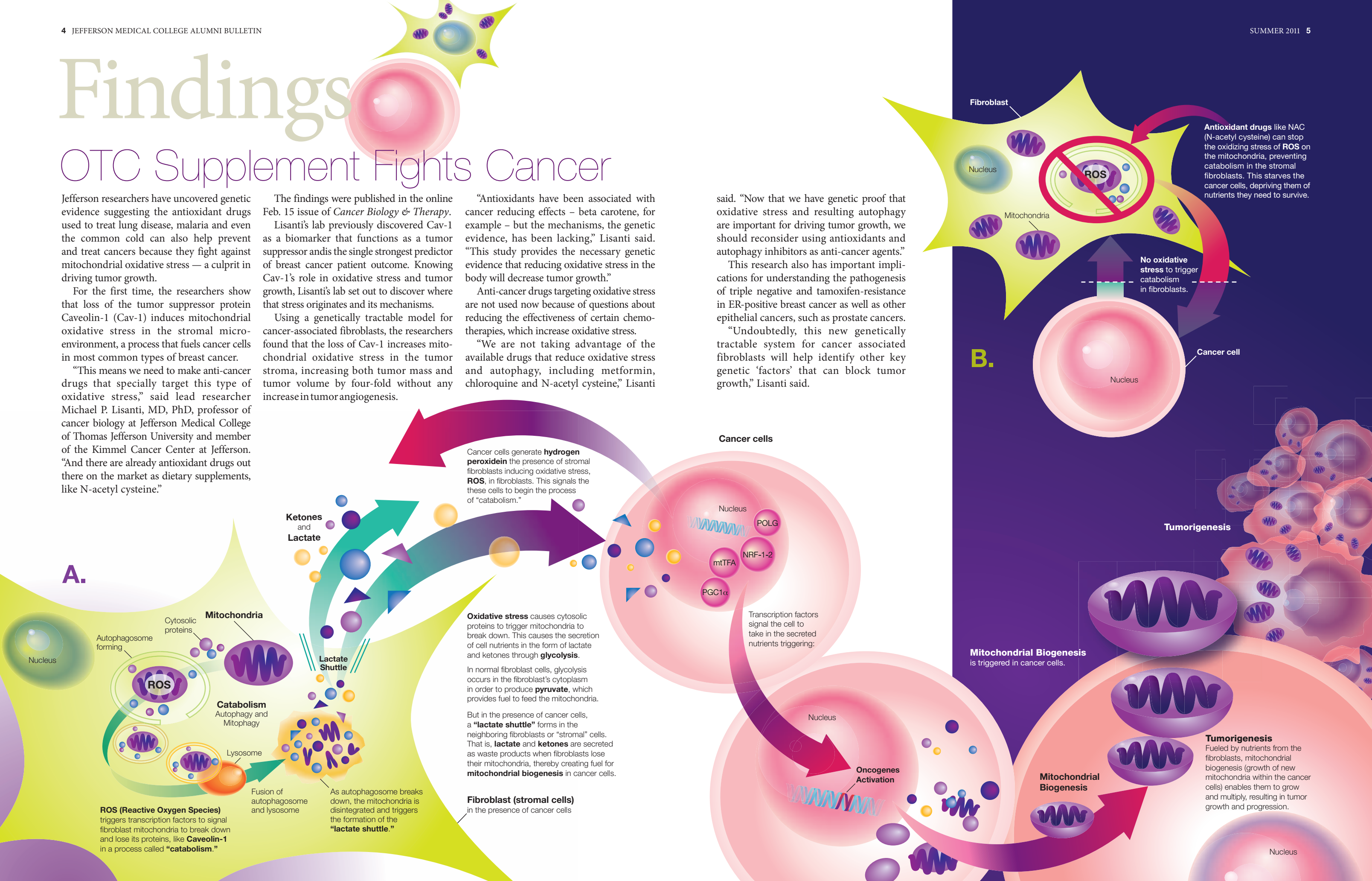
Anti-cancer drugs targeting oxidative stress are not used now because of questions about reducing the effectiveness of certain chemotherapies, which increase oxidative stress.

"We are not taking advantage of the available drugs that reduce oxidative stress and autophagy, including metformin, chloroquine and N-acetyl cysteine," Lisanti said.

said. "Now that we have genetic proof that oxidative stress and resulting autophagy are important for driving tumor growth, we should reconsider using antioxidants and autophagy inhibitors as anti-cancer agents."

This research also has important implications for understanding the pathogenesis of triple negative and tamoxifen-resistance in ER-positive breast cancer as well as other epithelial cancers, such as prostate cancers.

"Undoubtedly, this new genetically tractable system for cancer associated fibroblasts will help identify other key genetic 'factors' that can block tumor growth," Lisanti said.





Scalpel, Forceps, Joystick:

Surgeons Turn to Robots
for Minimally Invasive Procedures

In the past decade, surgical departments at more than 1,500 hospitals worldwide have welcomed a 7-foot-tall member to their team. With four arms and a 1,000-pound frame, the newcomer does not resemble any other surgeons – because it is not a surgeon at all, but instead a surgical robot.

Called da Vinci and designed for use in minimally invasive surgeries, the sole FDA-approved robotic surgical system has seen exceptional sales growth since its introduction in 1999. Intuitive Surgical, maker of da Vinci and the only official source of data related to the system, reports that in 2009, 73,000 American men had robotic-assisted prostate cancer surgery – the most common robotic-assisted procedure. Seven years earlier, fewer than 5,000 prostate cancer patients used the option; the year the system debuted, fewer than 1,000 did.

“Very few medical tools have taken hold in the medical community as quickly as this one,” said Sean R. Tunis, MD, director of the Center for Medical Technology Policy, a nonprofit organization that evaluates medical technology.

Despite widespread acceptance, robotic-assisted surgery still draws controversy. The equipment comes at a high cost, and no evidence-based studies have confirmed whether surgical robots produce superior, inferior or equivalent cancer control when compared to pure laparoscopic procedures. Physicians across the country continue to debate the advantages and disadvantages the da Vinci system presents for both clinicians and patients.

“There is a deeply held view across society that the latest technology is by definition the best and safest,” Tunis said. “But with robotic surgery, in reality, we have no idea if that’s true.”

Does Newer Mean Better?

During robotic-assisted procedures, a surgeon sits at a console about 10 feet away from the patient, and the robot sits next to the patient. The surgeon, his fingers in Velcro rings connected to a master controller, operates the robot’s four arms – three for manipulating medical instruments and one for an endoscopic camera. The console shows 3-D images of the surgical area.

These images, according to many physicians, give robotic-assisted procedures an edge over pure laparoscopic procedures.

“Laparoscopic and robotic surgery provide many of the same benefits: smaller incisions, less bleeding and quicker recovery than with open surgery. But with pure laparoscopy, the loss of 3-D visualization is a major drawback,” said Costas D. Lallas, MD ’98, associate professor in the Department of Urologic Surgery and director of robotic surgery at Jefferson. “A high-definition screen that magnifies the surgical area 10 times means I can see anatomy with the robot that I would not be able to see with my naked eye – and that makes for a more precise operation.”

Laparoscopy also involves what Bhavana Pothuri, MD ’95, director of robotics for obstetrics and gynecology at New York University’s Langone Medical Center, calls “counterintuitive movements.” To move the tip of a laparoscopic instrument to the left, a

“The robot enables a more dexterous, wrist-like motion rather than the more rigid movements of regular laparoscopic instruments.”

Bhavana Pothuri, MD '95

surgeon must move the end outside the body to the right.

“The robot enables a more dexterous, wrist-like motion rather than the more rigid movements of regular laparoscopic instruments,” Pothuri said. “And it filters out hand tremors while basically turning my hands into tiny instruments that can maneuver in spaces where no human hand normally would.”

Surgeons accustomed to spending hours on their feet often welcome the robot’s comfortable console, which features cushioned armrests and a contoured head rest.

“The ability to sit down keeps me from getting tired during long cases,” said Sangeeta Senapati, MD '01, assistant professor of obstetrics and gynecology with NorthShore University Health System in Illinois.

Despite its advantages, robotic-assisted surgery sparks enough debate that some surgeons – like Gerald L. Andriole Jr., MD '78 – refuse to use the technology.

“I’ve performed many robotic-assisted surgeries but now only do pure laparoscopic surgery. I want my hands on the instruments; I want to do all the cutting and sewing myself. With mechanical arms between me and my instruments, I have no tactile feedback – a crucial loss,” said Andriole, chief of urologic surgery at Washington University School of Medicine in St. Louis.

To compensate for the loss of force feedback, surgeons must rely on their other senses, primarily sight, to gauge various feats, such as when a suture is perfectly tied.

“With the robot, I cannot feel how much pressure the scissors must exert in order to make a cut or how hard the robot is squeezing forceps or pushing on a needle,” Andriole said. “Critical intra-operative decisions are made based on the ease with which tissue can be dissected, and I have precious little information if I am using a robot.”

Andriole also emphasized that robots are only as skilled as the surgeons controlling

them. “Overall, the robotic system adds no expertise and simply replicates the movement of the physician’s hands,” he said.

Perhaps the most serious of the disadvantages, Andriole said, is cost.

The Economics

With a price tag of about \$1.2 million – or \$1.75 million for a more sophisticated version introduced in 2009 – the da Vinci system also brings disposable supply costs of \$1,500 to \$2,000 per procedure, far more than pure laparoscopy. And further academic research is needed to examine whether robotic-assisted surgery produces better outcomes for patients than standard laparoscopic procedures.

One four-year national study of Medicare prostate cancer patients did indicate that procedures using the robot could lead to fewer in-hospital complications, but the trial lumped pure laparoscopy patients among those who had robotic-assisted surgeries, muddling conclusions.

To determine whether the more than \$100 million the U.S. healthcare system spends annually for robotic-assisted surgeries makes sense, \$1.1 billion was included in the 2009 economic stimulus package for research comparing robotic-assisted surgery results to other methods.

“Although we currently know of no difference in cancer control with the robot, we see over and over that patients who have robotic-assisted procedures are discharged earlier, need fewer pain meds and return to work more quickly than patients who have open and even laparoscopic surgery,” Lallas said. “Factoring in those reductions of costs to hospitals, insurance companies and society helps to compensate for the robot’s expense.”

Hospitals spend a lot of money up front to implement a robotic surgical system, but proponents of robotic-assisted surgery deem those costs essential for keeping up with their competitors.

“Patients view hospitals with robots as centers of excellence. We need to cater to what patients want – and they want the robot,” Lallas said.

Even without clear evidence that robotic-assisted surgery produces superior results, patients flock to the technology. Jefferson purchased its first da Vinci robot in 2005 and now has three, all of which Lallas said are in use almost daily. Intuitive Surgical reports that worldwide, close to 100,000 prostatectomies and hysterectomies are now performed with the robot annually. Intuitive provides its customers with an abundance of marketing guidance and collateral to publicize the purchase of a robot.

“The marketing of da Vinci is very good as a whole but above all excels on an electronic level,” Senapati said. “Information about the robots is all over the Web and extremely easy for patients to find. I don’t do robotic procedures exclusively, but patients learn online that I do use the robot and come to me specifically for that reason.”

What the Future Holds

Surgeons hope that expenses associated with surgical robots will diminish as new competition enters the market.

“Since da Vinci came out more than 10 years ago, technology has advanced significantly. Nobody knows where we might be in 10 more years, but I don’t think Intuitive’s monopoly can last, and competitors will drive down costs,” Lallas said.

Physicians, scientists and engineers – some working with Intuitive, some not – are fervently collaborating to develop the next generation of surgical robots, with many efforts focused on decreasing their size, weight and cost as well as enhancing features on the operator’s console.

Some are fine-tuning robotic systems very different from da Vinci. For example, Curexo Technology in Fremont, Calif., has developed

a system that enables orthopaedic surgeons to plan joint replacement procedures on a computer workstation days before an operation takes place. Using 3-D data from a patient's CT scan, surgeons create a "virtual surgery" that is saved and later used to help execute the procedure precisely as planned in the operating room.

The types of surgeries performed using the robot continue to grow. This winter, Cataldo Doria, MD, PhD, the Nicoletti Family Professor of Transplant Surgery and director of the Division of Transplantation at Jefferson, performed the first robotic-assisted liver resection at Thomas Jefferson University Hospital. Doria is among a small handful of surgeons in the United States certified to do so.

And scientists at Jefferson also are designing their own robotic systems. Last fall, after seven years of collaboration, a team of medical physicists, engineers, radiation oncologists, radiologists and urologists began a clinical trial using a new robot they developed to place radioactive seeds into prostate tumors. Prostate brachytherapy requires precise insertion of dozens of radioactive seeds in very specific sites, leaving substantial room for human error. The team hopes the new robot, called Euclidian, will overcome this problem. A physician operates the robot with a handheld controller and a computer interface but is capable of reverting to manual seed insertion at any time.

"Euclidian is very different from da Vinci, but both are about giving patients more options," said Adam P. Dicker, MD, PhD, professor and chair of Jefferson's Department of Radiation Oncology. "Technology is going to continue to advance, and we need to do rigorous large-scale tests to work out all the kinks and use it as efficiently as possible."

Rigorous large-scale tests are exactly what Sean Tunis, the director of the Center for Medical Technology Policy, believes researchers need to complete to boost confidence that robotic-assisted surgery offers legitimate benefits compared to pure laparoscopy.

"Clinicians, scientists and funders need to get more clarity on adequate studies that are both feasible and affordable," he said. "For now, the jury is just out. Not enough is known, and the feedback we do have is primarily anecdotal. That doesn't make the robot useless; it just means it's hard to judge." ■



"Patients view hospitals with robots as centers of excellence. We need to cater to what patients want – and they want the robot."

Costas D. Lallas, MD '98



Feeling Ill?

There's an App for That

A type 1 diabetes diagnosis three years ago turned Sean Carabarin's world upside down. Faced with an immediate need to overhaul his eating habits, he found support in an unlikely source: his iPhone.

"It had become a chore to go out to eat; I constantly took a gamble with carb counting," said Carabarin, who was 24 when diagnosed. "So as soon as I got my first iPhone, I started downloading diabetes-related apps, and they've made my life so much easier. It's like having a flashlight in a dark room – I am finally able to see what's in front of me."

Carabarin now uses apps every day to track his blood glucose level, calculate carbohydrates in meals and determine how much insulin to take.

Diabetes support is just one of hundreds of health services now available via mobile applications. On the consumer side, apps help with weight management and smoking cessation; tracking fertility, heart rate and blood

pressure; guiding self-diagnoses; and administering first aid. For physicians, apps offer swift access to drug information, journal articles and medical images and equations.

Dependence on these apps will only expand, according to the California HealthCare Foundation, an organization promoting advances that improve healthcare quality while reducing costs. The group reports that in the next five years, 1.4 billion people worldwide will use smartphones, with more than one in three having at least one health-related app. "The future of health care involves more personal control. People want to take command of their health, and they want to have resources at their fingertips," said Brian Einloth, software engineering director with Product Development Technologies, a medical design firm that creates apps. "These days, we are used to having email, banking, shopping and music all instantly accessible on our mobile devices – why not health care, too?"

The Mobile Healthcare Market

Physicians and patients around the world have downloaded medical apps 200 million times with the number expected to grow to more than 600 million in a year, according to a report from telecommunications market research company Pyramid Research.

"And as new apps are designed, they become more sophisticated and efficient," said Einloth.

Early mobile medical apps often required users – usually healthcare professionals – to enter large amounts of data into searchable dictionaries of drug names and disease symptoms. Today's apps operate more quickly and precisely.

"Mobile apps are highly specialized, so therefore your transactions are more concise than with broader Web applications," Einloth said. "You can pinpoint the result you want in a matter of seconds rather than wading through a bunch of generalized muck first."

This convenience has resulted in a rapid increase in the use of mobile applications in

"People want to take command of their health, and they want to have resources at their fingertips."

Brian Einloth

the clinic. Another market research firm, Kalorama Information, estimated in 2004 that about 25 percent of practicing physicians in the United States used a PDA or smartphone during office visits. The figure jumped to nearly 40 percent in 2008, and, by 2010, half of physicians were using smartphones on a regular basis at work.

The most common app used in the clinic, Epocrates, serves as a reference for information on drug interactions, dosing and pricing. Using the app, which is available on all mobile platforms, physicians can even show patients what their prescription medications will look like or see black box warnings from the FDA.

“Epocrates is basically a tiny, electronic version of the Physicians’ Desk Reference,” said family practitioner Amber Tully, MD ’05. “Sure, I could just Google information as needed – but the app is faster. I use it every day, and so does almost every doctor I know.”

No research has confirmed what apps patients use most frequently, but Pyramid Research’s report “Health Check: Key Players in Mobile Healthcare” shows that about 70 percent of people worldwide have an interest in access to health apps. In addition to monitoring their personal health conditions, patients use apps for everyday tasks such as finding physicians, scheduling appointments, refilling prescriptions and maintaining health records.

According to James Studdiford, MD, professor of family and community medicine at Jefferson, patients today often share health information with physicians via a mobile platform.

“We’re seeing a movement toward digitization with everything medical,” Studdiford said. “Technology is changing the whole

interface between physicians and patients. Instead of calling me to describe a rash, lump or bump, my patients will send me a digital photo. Apps fit into this technology trend, educating patients and keeping them on top of their health.”

The Latest and Greatest

Students are also tapping into the trend.

“Apps have helped me greatly,” said fourth-year JMC student Ali Linsk. “During outpatient rotations, I use one that lets me plug in my patient’s age, race, sex and so on and then returns guidelines for all the standard screening tests recommended for that particular person. You might think that should be basic knowledge for a doctor, but screenings vary based on many factors, and students just starting out want to double check.”

Tully and Studdiford have even developed their own app, a tool for students to test their skills. Called “Top Doc” and introduced last year, the app features asks users to develop a diagnosis from photographs.

“More and more, board exams are being geared toward pseudo office visits, and Top Doc creates a virtual office visit,” Tully said. “We wanted to appeal to medical students’ competitive nature and create a way for them to learn from a fun, interactive game rather than a textbook.”

Apps for physicians and consumers are evolving, too. In the past year, the FDA has approved apps for clinical functions. For example, radiologists who need to review medical images but can’t make it to a workstation are now allowed to make a diagnosis off their iPhone using the Mobile MIM Reader,

recently cleared for MRI, CT and nuclear medicine readings. Another newly approved app, MobiUS, enables physicians to do ultrasounds with only a wand, some gel and their smartphone. Handyscope comes with an external device that allows anyone who purchases it to screen his body for skin cancer.

“If people aren’t using apps in some way to help themselves stay healthy, they are missing out,” Carabarin said. “It really is the small things that complete the bigger picture of an easier and healthier life.” ■

“Sure, I could just Google information as needed – but the app is faster. I use it every day, and so does almost every doctor I know.”

Amber Tully, MD '05





Splendid Vindication



W.W. Keen and the Secret Operation on Grover Cleveland

By Matthew Algeo

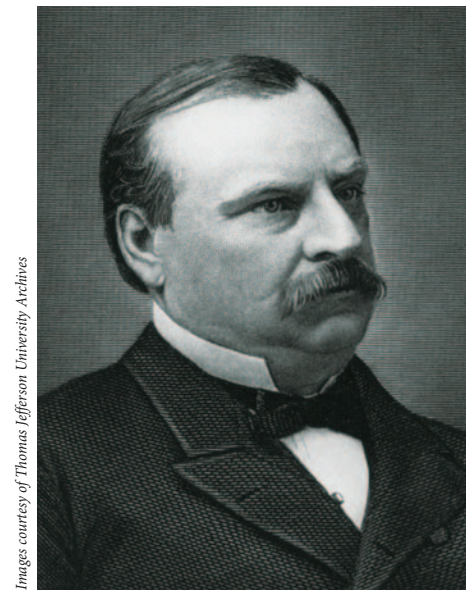
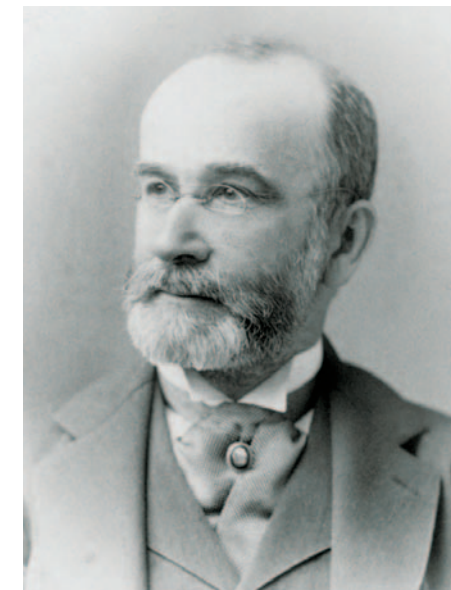


Image courtesy of Thomas Jefferson University Archives



William Williams Keen, MD 1862, professor of surgery at Jefferson Medical College, had reached the pinnacle of a long and eminent career when he agreed to put his reputation on the line.

Since his graduation from Jefferson, he had succeeded his mentor, Samuel D. Gross, as the most celebrated surgeon in the United States, having edited the American edition of *Grey's Anatomy* and performed the nation's first successful brain tumor removal. Citizens around the country spoke of him with awe and admiration – and Joseph Bryant asked him to risk it all.

Bryant, a prominent New York surgeon and the personal physician of U.S. President Grover Cleveland, sent Keen a cryptic letter in June 1883 to request a meeting about “a very important private matter.” Intrigued and a little unnerved, Keen immediately wired Bryant, suggesting they meet on the deck of the Fall River Line ferry at 4 p.m. the following Monday in New York.

On June 26, the two surgeons met on the deserted ferry, where Bryant gravely announced, “Mr. Cleveland is suffering from

a serious disease.” He explained that a large tumor had been discovered on the roof of the president's mouth and would be removed in an operation that Friday on the Oneida, a yacht owned by Cleveland's close friend, Elias Benedict.

The president feared that Wall Street would panic if word of his cancer spread and insisted that the matter remain a secret. Bryant was assembling a team of the finest surgeons for the operation, and he asked Keen to take part.

“I readily agreed,” Keen later wrote.

Four days later, under the cover of darkness, he slipped into a small launch and was ferried to the Oneida, which was anchored in the East River. Once on board, Keen met Bryant, the four other surgeons on the team and the patient. Sitting in a deck chair, Cleveland smoked cigars and chatted amiably before retiring for the night.

“I was deeply impressed by his splendid personality and his lofty patriotism,” Keen remembered.

The next morning, the Oneida weighed anchor and sailed into Long Island Sound. Below deck, in the yacht's parlor, the surgeons

prepared for the operation. A large chair was lashed to the mast in the center of the room; there would be no operating table. The only artificial light would come from a single electric bulb connected to a portable battery.

The physicians boiled their instruments and pulled crisp white aprons over their suits, and, shortly after noon, the president entered the parlor. Using nitrous oxide and ether as anesthetics, Keen and his colleagues removed the tumor, along with five teeth and much of the upper left palate and jawbone.

“Never did I feel such a deep, almost overwhelming, sense of responsibility as during that operation,” Keen later wrote. The procedure lasted 90 minutes and took place wholly within the patient's mouth, sparing the president's trademark walrus moustache. No external scars would betray the secret.

Cleveland was deposited at his summer home on Cape Cod four days later. He healed rapidly. By the middle of July, he was fitted with a vulcanized-rubber prosthesis that plugged the hole in his mouth and restored his normal speaking voice. All the while, the public believed that the president had merely suffered a toothache.

On Aug. 29, however, the *Philadelphia Press* published an account of the operation under the headline “The President a Very Sick Man.” The author, Elisha Jay Edwards, the paper’s New York correspondent, had been tipped off to the operation by a friend. Edwards confirmed the story with Ferdinand Hasbrouck, a dentist who had administered the president’s anesthesia on the Oneida.

Edwards’ report was remarkably accurate and still stands as one of the great scoops in the history of American journalism. But the Cleveland administration denied his story, and the public was inclined to accept the word of the man known as the “Honest President.” Rival papers denounced Edwards as a “disgrace to journalism” and a “calamity liar.”

The secret held.

Keen always regretted how Edwards was so unjustly maligned, and in 1917, the physician broke the embargo and published a full account of the operation in the *Saturday Evening Post* – in part, Keen explained, to “vindicate Mr. Edwards’ character as a truthful correspondent.” By then, 24 years had passed since the operation. Cleveland had died in 1908 of causes unrelated to his oral disease, and only three witnesses to the events on the Oneida remained: Keen, Elias Benedict and John Erdmann, who had been Bryant’s young assistant and was now an acclaimed surgeon in his own right.

Edwards was still alive as well, and after Keen’s account was published that September, the elderly journalist was inundated with congratulatory letters and telegrams.

“My congratulations, sincere and heartfelt, for the splendid vindication of you contained in the remarkable article by W.W. Keen,” wrote one old colleague.

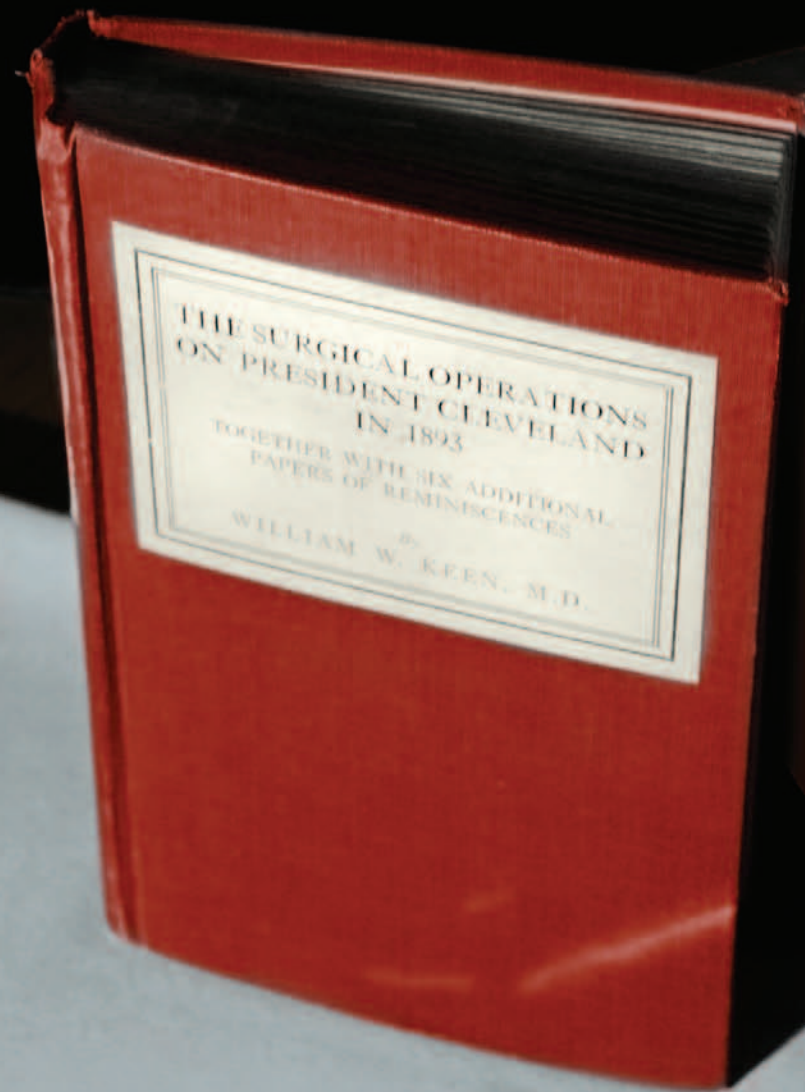
The outpouring deeply moved Edwards, who wrote Keen to thank him: “I cannot tell you how much I appreciate what you wrote of my relation to the operation.”

Keen was equally gratified. “After suffering in silence for 24 years,” he wrote of Edwards, “his vindication was now complete.”

Pathologists reviewing Cleveland’s tissue samples in 1980 ultimately determined that his tumor was a verrucous carcinoma – a less invasive cancer than the epithelioma initially diagnosed by the president’s physicians – explaining why surgery alone cured the disease. ■

Matthew Algeo is the author of *The President Is a Sick Man: Wherein the Supposedly Virtuous Grover Cleveland Survives a Secret Surgery at Sea and Vilifies the Courageous Newspaperman Who Dared Expose the Truth*.

Illustration of the cheek retractor W. W. Keen bought in Paris in 1866. With this instrument, the surgery was done entirely in the mouth, thus avoiding any external scar.



Never did I feel such a deep, almost overwhelming, sense of responsibility as during that operation.

W.W. Keen

The Importance of Empathy: Research

Researchers at Jefferson Medical College have found evidence supporting what many physicians have long suspected: A doctor's empathy can play a critical role in a patient's health.

"These findings, if confirmed by larger scale research, suggest that empathy should be viewed as an integral component of a physician's competence," said Mohammadreza Hojat, PhD, research professor in the Department of Psychiatry and Human Behavior and director of the Jefferson Longitudinal Study of Medical Education in the Center for Research in Medical Education and Health Care. "This study supports the recommendations of professional organizations that schools assess and enhance empathetic skills in undergraduate and graduate medical education."

The study appeared in the March 2011 issue of *Academic Medicine*.

The researchers focused on 891 diabetic patients treated from July 2006 to June 2009 by 29 physicians in the Department of Family and Community Medicine. Researchers used the nationally recognized Jefferson Scale

of Empathy, or JSE, developed in 2001 as the instrument to measure empathy in the context of medical education and patient care. The scale defines empathy as a predominately cognitive attribute that involves an understanding and an intention to help.

The 29 physicians completed the JSE. The researchers chose hemoglobin A1c test results to correlate with the JSE scores and also analyzed the patients' LDL cholesterol level, believing they would find a direct association between a higher physician JSE score and a better control of patients' hemoglobin A1c and LDL levels.

They were right. The likelihood of good control was significantly greater in patients of physicians with high empathy scores than in the patients of physicians with low scores. The results suggest that empathetic care can contribute to patient satisfaction, trust and compliance, all leading to more desirable clinical outcomes.

Fred Markham, MD, professor in the Department of Family and Community Medicine and one of the study's co-authors, welcomed the results.

"For those of us in primary care medicine who have devoted much of our working lives to developing empathic relationships with our patients, research findings of improved patient outcomes among the more empathic physicians is very gratifying indeed," he said. "We have long believed in the importance of empathy and finding measurably better outcomes lends support to our attempts to nurture empathetic medical students and residents." ■

Fred W. Markham, MD, and sports medicine fellow Kristopher S. Fayock, MD, listen attentively to a clinical patient.

Jefferson Faculty



Marion Siegman, PhD, with JMC students Jennifer A. Kincaid and Kanani Titchen.

Marion Siegman, PhD: Flexing Academic Muscles

When most children her age could be found playing, a young Marion Siegman was often tagging along with her father, a family physician. She spent the better part of her childhood in the New York City borough of Brooklyn watching him set fractures, deliver babies and tend to the ill.

“I could never tell who was an aunt, uncle or cousin versus a patient,” Siegman said. “They were all family to me. And when we were at home, my dad’s office was my playground.”

Long feeling “programmed to be a physician,” she enrolled in pre-med courses at Newcomb College of Tulane University after high school, but a position assisting a professor in his genetics lab unearthed a passion for research.

Siegman completed a bachelor’s in biology and went on to work in several prestigious labs, including at the Rockefeller Institute for Medical Research and the Karolinska Institute for Cell Research and Genetics in Stockholm. She decided to pursue a graduate degree when one of her Rockefeller mentors, a smooth muscle expert, invited her to join his new lab at the State University of New York-Downstate Medical Center.

“While in Sweden, I wrote an important paper that was published prominently – with several unexpected co-authors listed. I realized

that to get the credit I deserved for my work, I needed the credentials to run my own lab,” she said.

Siegman’s role as the first woman in SUNY-Downstate’s pharmacology graduate program marked the beginning of many firsts. She joined Jefferson’s Department of Physiology in 1967 and became the first woman in basic sciences to become a full professor at JMC a decade later. In 2002, she was named the first female academic department chair, a position she continues to hold today.

Siegman is an internationally recognized authority in smooth muscle mechanics who has presented at conferences in more than 10 countries. Her current studies focus on smooth muscle function in disease states, particularly in subjects with diabetes.

Despite her enthusiasm for research, Siegman’s most fulfilling work involves teaching. Of the 3,200 female students admitted to Jefferson Medical College over the past 50 years, she has taught all but 75. Her brilliance in front of the classroom has earned her many teaching awards, including the Burlington-Northern Foundation Award; the Christian R. and Mary Lindback Award; the Kappa Beta Phi of Jefferson Medical College Faculty Award; and the Dean’s Award for Teaching Excellence at JMC. The JMC Class of 2001, along with friends and colleagues, presented the University with Siegman’s portrait.

Siegman recently shared her thoughts on her career and how the environment has changed for women in medicine since she first came to Jefferson.

Q: What was the climate like for women when you arrived at JMC in 1967?

A: Female students would often ask me how to deal with professors who made inappropriate comments during lectures (I told them to raise their hand and interrupt). On a more personal note, while I was given everything I needed to establish my lab, salary continued to be an issue. I was a PhD with my own grant, and the chap in the lab next door was a non-practicing physician with no grant, yet he still was paid a higher salary.

Q: How are things different today?

A: Women today know better how to negotiate both salary and rank. Also, early on, female students I mentored were very preoccupied with whether they could succeed in medicine while raising a family. Female students now are savvy and grounded. Gloria Steinem could learn from them.

Q: What advantages have you found to being a woman in medicine?

A: I can’t think of any. In my field of interest, smooth muscle, some of the most accomplished researchers have been women. I think that’s because smooth muscle is very intricate and complicated, and many women have the special patience required to succeed in the field. Women have what we call “sitzfleisch” in German: perseverance and staying power.

Q: How about disadvantages?

A: Aside from salary discrepancies, I have never felt I was a victim because of my gender.

Q: What are your thoughts on teaching?

A: Teaching for me is a welcome break from the lab; I would never take a job that didn’t involve teaching, and I am fortunate to be able to teach the subjects I study every day. The students energize me, and I just hope they can see beyond the enormous burden of the amount of information they are expected to retain and pause long enough to recognize the wonder of nature and science – and enjoy learning. I maintain an open-door policy. I never chase students or hover over students; they know that I am available to help when needed. I also remind students to strive for excellence at all times.

Q: Has your choice of a demanding scientific career played a role in your personal life?

A: My career has consumed much of my life, but I allowed that to happen because I enjoy my work so much. I have many interests outside of work – travel, photography, music, cooking, collecting fine art. I have had serious relationships that challenged my strong determination to have a career, but I never saw a need to choose between work and an otherwise full personal life.

Q: What is your proudest accomplishment?

A: I am more proud to have become Jefferson’s first female full professor in basic sciences that I am to have become the first woman to chair an academic department. In 1977, female professors were rare, and I worked hard to get there. My appointment as interim department chair following my predecessor’s retirement in 2001 made sense because I was the most senior person in the department. By then, the appointment of a female chair at JMC was simply long overdue.

Student Profile

Erin Lally, MD '11: On Top of the World

Erin Lally was just finishing dinner when she got word that a group of Spanish mountaineers was found alive after a windstorm on Mount Everest. Already on her descent from the summit, Lally headed out from Everest's Camp 2, about 10,000 feet below the world's highest peak. At the neighboring camp, she found her fellow climbers in conditions ranging from severe frostbite and dehydration to broken limbs and blindness. Among the group, Lally was the only person who had ever put in an IV line.

"I was the only semi-physician," said Lally, a fourth-year medical student just weeks away from graduation at the time. One climber who had fallen on a pile of rocks was semi-conscious with two broken legs, blindness due to cerebral edema and face, hands and feet black from frostbite.

"I'd never seen frostbite in my life," Lally said. "It's not something you see in the city." Receiving instructions by radio from physicians at Base Camp, Lally administered drugs and helped stabilize the two sickest climbers until they could be airlifted to a medical facility.

Although her experience on Everest was worlds away from her clinical rotations at Jefferson, Lally found confidence in the solid foundation Jefferson had provided her. "Going through the rotations at Jefferson,

working in the ER and the clinics at Jefferson, you learn a lot of practical skills," said Lally. "Jefferson does a great job preparing you for whatever comes your way."

A few months before she climbed Everest, Lally was able to check off another big achievement on her list of goals – a residency match at Wills Eye Institute. "Getting into Wills Eye – that was my Everest of medical school," said Lally. Even before she started Jefferson, Lally knew she wanted to be an ophthalmologist. Right from the outset, she set her sight on Wills, where her father, Patrick, had also trained. "It was an incredible day – the culmination of four years," she recalled when she found out she matched at her "reach school."

The precision and immediate reward of the surgeries drew Lally to the field. "You do a 10-minute procedure to remove a cataract, and the patient can see again," she said. "When you restore someone's sight, you're giving them new life."

Someday Lally hopes to have her own practice in her home state of Colorado. Her life to-do list also includes volunteering at the Himalayan Cataract Project, which provides hundreds of cataract surgeries a week in remote parts of the Himalayas, where the sun's strength at high altitudes causes an equally high incidence of cataracts. For Lally, that service will unite her love of the Himalayas, its people and culture with her passion for eye surgery. Lally credits Jefferson with encouraging her and her classmates to pursue their interests, inside and outside of medicine.

"Jefferson stressed the importance of being an individual," Lally said, "and of following your dreams" – which so far have led her up 29,035 feet, and soon, around the corner in Center City.



Left: Lally and team reach the summit; **above top:** Lally shows her Jefferson spirit; **above bottom:** Lally with her parents and Dean Mark Tykocinski, MD.

OnCampus



Waldman



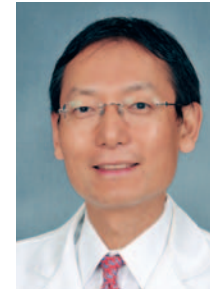
Spaeth



Gonnella



Buzurovic



Yu



Rostami



O'Malley



Gilmore



Doria



Goldstein

People

Waldman Honored for Groundbreaking Work

Scott Waldman, MD, PhD, chair of the Department of Pharmacology and Experimental Therapeutics, received the prestigious Award in Excellence in Clinical Pharmacology from the PhRMA Foundation last March. The award recognizes discoveries that Waldman has made that hold promise in diagnosing, treating and even preventing colorectal cancer, the third-leading cause of cancer-related deaths in the United States.

At Jefferson, Waldman supervises medical school therapeutics courses, trains graduate students and postdoctoral fellows and directs the GI Cancer Program.

Spaeth Receives Inaugural Award

George L. Spaeth, MD, the Louis J. Esposito Glaucoma Research Professor, received the inaugural Franceschetti Award from the University of Geneva last February for his contributions to glaucoma research. The honor came eight months after he received the Weisenfeld Award from the Association of Research and Vision in Ophthalmology, which annually recognizes contributions to the clinical practice of ophthalmology.

Gonnella Gets Honorary Degree

Joseph S. Gonnella, MD, JMC dean emeritus and director of the Center for Research in Medical Education and Health Care, received an honorary degree from the University of Minho in Braga, Portugal, in April.

Headlines

New Tumor Technique Saves Healthy Tissue

Medical physicists have demonstrated a new real-time tumor tracking technique that can help minimize the amount of radiation delivered to surrounding healthy tissue in a patient – up to 50 percent less in some cases – and maximize the dose the tumor receives.

Respiratory and cardiac motions displace and deform tumors, forcing radiation oncologists to expand the margin during therapy, often at the cost of healthy tissue and even critical organs. A new 4-D, robotic technique developed at Jefferson continuously tracks tumors during radiotherapy, giving physicians precise targets.

Published in the online Feb. 1 issue of *Physics in Medicine and Biology*, the study was co-written by Ivan Buzurovic, PhD, a medical physics resident, and Yan Yu, PhD, director of medical physics.

Researchers ID Key MS Molecule

Jefferson neuroscientists have identified a driving force behind autoimmune diseases such as multiple sclerosis and suggest that blocking this cell-signaling molecule is the first step in developing new treatments to eradicate these diseases.

Researchers led by Abdolmohamad Rostami, MD, PhD, chair of the Department of Neurology, found that granulocyte-macrophage colony-stimulating factor, or GM-CSF, appears to be the key culprit in the onset of

MS; without it, T helper 17 cells did not induce the MS-like disease in an experimental animal model.

Th17 cells have been shown to play an important pathogenic role in humans and experimental models of autoimmune diseases, but the mechanisms have remained elusive until now. The study appeared in *Nature Immunology*.

Team Finds Lead in Ceramics

Acting on a hunch, a research team from the Department of Emergency Medicine discovered an alarming amount of lead contamination in ceramic cooking and eating utensils sold in Philadelphia's Chinatown, drawing the attention of federal officials and earning extensive media coverage.

The team – led by Gerald O'Malley, DO, director of clinical research, and resident Thomas Gilmore, MD – purchased 136 pieces of Chinese ceramics. With a test commonly used on paint, the team found lead in almost 30 percent of the items. In-depth tests on 25 of those found that two plates and three spoons leached lead in quantities that far exceeded the limits set by the Food and Drug Administration.

"My concern is that this is an unrecognized source of lead poisoning in a large population of patients that aren't normally tested for lead," O'Malley said.

The Associated Press, all three major networks and *The New York Times* reported on the research.

Medical Frontiers

First Robotic-Assisted Liver Resection at Jefferson

Cataldo Doria, MD, PhD, the Nicoletti Family Professor of Transplant Surgery and director of the Division of Transplantation, became the first surgeon at Jefferson to perform a robotically assisted liver resection in January. He is only one of a handful of surgeons across the country certified for the procedure.



Researchers Test Cholesterol Drug on Cancer

Thomas Jefferson University has started recruiting patients for a new clinical trial to test whether the cholesterol-reducing drug rosuvastatin prevents colon cancer from recurring. Previous laboratory research and population studies have shown that patients taking statins had fewer colon polyps. However, those findings come largely from retrospec-

tive, observational studies originally designed to investigate lipid-lowering or cardiovascular endpoints in the short term rather than tumor endpoints. The trial, which will involve 400 medical centers, is being done through the National Surgical Adjuvant Breast and Bowel Project cooperative group. Scott Goldstein, MD, associate professor of surgery, is principal investigator for Jefferson.

Jefferson Professor Receives Keck Foundation Grant

Isidore Rigoutsos, PhD, director of Jefferson's Center for Computational Medicine, has received a prestigious \$1 million grant from the W.M. Keck Foundation, which supports pioneering biomedical research projects that are "high-risk with the potential for transformative impact."

Rigoutsos' winning proposal, "The Uncharted 98 Percent of the Human Genome," builds upon his revolutionary work in computational biology – a field that has become even more critical since the mapping of the human genome, which produced an abundance of data that no human could sort efficiently. Computational biology takes several forms, including data mining and pattern analysis, Rigoutsos' specialty.

"All of us at Jefferson are honored by the Keck Foundation's support of our discovery program in the emerging field of computational medicine," said JMC Dean Mark L. Tykocinski, MD. "Dr. Rigoutsos' groundbreaking work opens powerful new avenues for unraveling the genetic machinery of cells and ultimately for bringing new diagnostic biomarkers and personalized therapies to the clinic. This remarkable grant and the project it enables will have significant benefits for the entire medical community."

Known as one of the "forefathers of bioinformatics," Rigoutsos joined Jefferson in February 2010 and serves as professor in the departments of Pathology, Anatomy and Cell Biology; Cancer Biology; and Biochemistry. He was previously at IBM, where he co-founded the Computational Biology Center nearly 20 years ago. Details on his work appeared in the summer 2010 issue of the *JMC Alumni Bulletin*, available at www.jefferson.edu/jmc/alumni/bulletin.cfm.

Based in Los Angeles, the W. M. Keck Foundation was established in 1954 by the late W. M. Keck, founder of the Superior Oil Company. The Foundation's grant making is focused primarily on pioneering efforts in the areas of medical research, science and engineering and undergraduate education. The Foundation also maintains a Southern California Grant Program that provides support for the Los Angeles community, with a special emphasis on children and youth. For more information, please visit www.wmkeck.org.



Vincent Armenti, MD '82, PhD '79 (third from the left), NTPR staff members and Howard Nathan, president and CEO of the Gift of Life Donor Program (fourth from the right), with children of transplant recipients.

National Registry Celebrates 20th Anniversary

Joy and celebration filled the Dorrance H. Hamilton Building in May as transplant recipients, their families and Jefferson faculty and students marked the 20th anniversary of the National Transplantation Pregnancy Registry with camaraderie, music and food.

The children had the unique opportunity to chat by video connection with Nobel laureate Joseph Murray, MD, who performed the first kidney transplant in 1954.

Surgeon Vincent Armenti, MD '82, PhD '79, a professor of pathology, anatomy and cell biology, started the national database in 1991 to track the role of immunosuppressants in pregnancies and their potential effect on fetal and childhood development. Since its inception, the NTPR has been financed by pharmaceutical companies that manufacture immunosuppressants, and today it stands as the longest-running voluntary pregnancy registry in the United States.

Over the past two decades, the registry has followed more than 2,000 transplant recipients who have become parents. Analyses have provided physicians and recipients with information about a host of factors, including potential problems that might occur during pregnancy. These statistics have helped countless healthcare providers counsel couples regarding family planning.

"The idea for the registry came to me after a recipient tearfully told me of her concerns about the safety of pregnancy," Armenti said. "Available information was much more limited at that time. The registry helps couples and transplant physicians to make decisions based on scientific data."

Physicians with questions about transplant patients and pregnancy or who want to register a patient should call the NTPR staff at 1-887-955-6877 or visit the website at www.jefferson.edu/ntpr.



2011

The 251 graduates in JMC's Class of 2011 celebrated their milestone June 2 at the Kimmel Center for the Performing Arts, where University President Robert L. Barchi, MD, PhD, encouraged them to serve as leaders in America's evolving healthcare system.

"Autonomy and independence must give way to interaction and coordination in the interest of quality clinical care," he said. "Sharing responsibility for clinical care will be a difficult social change in our profession. But as Jefferson graduates, you have already been trained in team-based medicine, and it is a transition that you can lead."

This year marked the Medical College's 187th commencement. An honorary degree of science was presented to Donna E. Shalala, PhD, president of the University of Miami and the longest-serving U.S. Secretary of Health and Human Services in history. Shalala held that position from 1993 to 2001, when the *Washington Post* described her as "one of the most successful government managers of modern times."

ClassNotes

’51 Ernest F. Doherty Jr. writes that he is grateful to JMC for preparing him for the “best profession in the world.” He lives in Yorktown, Va.,

Irwin L. Stoloff reports the passing of his wife, Bernice, on Feb. 14. His daughter, **Amy Stoloff, MD ’85**, lives in Oakland, Calif.

’54 Charles H. Greenbaum has moved into the Hill at Whitemarsh in Lafayette Hill, Pa., to join friends in independent living after the passing of his wife of 52 years, Julia. His son, Steven, is an associate professor of head and neck surgery at Jefferson.

’56 John W. Holdcraft stopped practicing medicine in 2002 at the age of 81. Holdcraft stays active in his church and Rotary Club and spends summers in the Adirondacks in New York, where he still golfs. His daughter, **Suzanne Holdcraft Sherrard**, graduated from JMC in 1983, and his granddaughter hopes to enroll in September.

’57 Arthur N. DiNicola lives in Minersville, Pa., and writes that his JMC education was one of the greatest gifts he ever received. Three of his children also graduated from Jefferson: **Maribeth DiNicola Sullivan, MD ’84**; **Arturo DiNicola, MD ’89**; and **Michelle DiNicola Loor, MD ’95**.

’58 Marvin Z. Rotman is a distinguished service professor, chair of radiation oncology and newly appointed interim chair of radiology at State University of New York in the New York City borough of Brooklyn. He lives in Kings Point, N.Y.

William J. Warren and his wife, Donna, have made a permanent move to St. Petersburg, Fla., where they live on the Intercostals.

’60 Sherman W. Everlof retired as chairman of the department of gynecology and women’s surgery at Mercy Catholic Medical Center in January. He lives in West Chester, Pa.

’71 Henry M. Feder reports that at the age of 65, he is not even thinking about retirement. He is still at his first job following training, practicing infectious disease, pediatric and family medicine at the University of Connecticut Medical Center. Feder has a 10-year-old daughter and 5-year-old twin boys at home in Farmington, Conn.

Robert C. Snyder lives in Washington, D.C., and welcomes calls from any classmates in the area.

’74 Arnold J. Willis has been named associate dean of clinical sciences at Aureus University School of Medicine in Aruba. Willis also serves as director of clinical subspecialties and professor of urology at the university. He still maintains a private practice in Washington and is medical director of the Greenbelt Urology Institute and Mid-Atlantic Cryotherapy. Willis lives in Alexandria, Va.

’80 Arthur H. Shedden serves as a medical safety officer with Johnson & Johnson Vision Care Inc. He and his family live in Jacksonville, Fla., and have been committed to building a “green” home using solar and water reclamation technologies.

’82 Sherry L. Blumenthal is chair of the Pennsylvania section of the American Congress of Obstetricians and Gynecologists. She is a partner in Womencare OB/GYN in Abington and Willow Grove, Pa. She has two grandsons, Miles and Julian.

’83 Thomas Cacciola enjoys practicing holistic medicine. He lives in Paramus, N.J., and is the proud father of three children. Thomas is attending Albany Medical School; Catherine is studying music at Ithaca College; and Angela is a cadet at the U.S. Naval Station in Annapolis, Md.

’86 Andrew R. Bradbury is serving in Afghanistan, where he is using his emergency medicine skills. His permanent home is in Rexburg, Idaho.

Jane A. Weida has been elected to a second term as treasurer of the Academy of Family Physicians Foundation. Weida lives in Lititz, Pa.

’87 Howard G. Hutchinson lives in West Deptford, N.J., and serves as chief medical officer for AstraZeneca Pharmaceuticals.

’88 Bruce L. Rollman has been promoted to professor of medicine with tenure at the University of Pittsburgh School of Medicine. He has lectured nationally and internationally about his NIH-funded comparative-effectiveness research studying the impact of treating mood and anxiety disorders across a variety of primary care, cardiac and other non-psychiatric settings. Rollman lives in Pittsburgh with his wife and three children and enjoys walking or biking to his office.

Richard K. Sterling, a professor of medicine and GI fellowship program director at Virginia Commonwealth University School of Medicine, was recently named professor and chief of hepatology at the school. Sterling lives with his wife, **Ann Auletta, MD ’88**, and their son in Richmond, Va.

’93 Walter E. Lewis runs his own family practice in his hometown of Media, Pa. In his spare time, he enjoys spending time with family and friends and fishing in Costa Rica.

’96 Teresa A. Marlino lives in Devon, Pa., and has a private practice at Paoli Hospital. She has been married to her husband, Joe, for 22 years and has four children.

’97 Edward A. Dachowski was inducted as a fellow of the American Psychiatric Association in May. He lives in Gallipolis, Ohio.

Steven C. Wing works with a democratic emergency medicine group in Toledo, Ohio. The group serves three hospitals. Wing and his wife, Rebekah, are proud parents of six children.

’04 Andrew Bilinski continues to serve in the U.S. Army Medical Corps as a family and emergency medicine physician. He was recently promoted to major.

Post Graduate Gregory Kane, MD, PG ’87, director of Jefferson’s Internal Medicine Residency Program, was one of 10 physicians to win the 2011 Parker J. Palmer Courage to Teach Award from the Accreditation Council for Graduate Medical Education. The award honors physicians for their commitment to teaching and their innovative and effective teaching methods.

Matthew T. Smith, MD, PG ’01, is the newly appointed chair of the department of medicine at Baylor Medical Center at Carrollton in Texas.

SAVE THE DATE



JMC Alumni Association Ski and CME Event

Jan. 29 – Feb. 3, 2012
Viceroy Snowmass
Snowmass Village, Colorado

The Viceroy Snowmass is at the base of one of the world’s finest ski mountains and host to ESPN’s X Games. This luxury resort is located steps from the new Snowmass Base Village and only seven miles from Aspen. Visit www.viceroyssnowmass.com to check out the hotel amenities and location.

For information on registration, room rates and the CME program, call Jefferson Events at 215-955-8387 or visit www.jefferson.edu/jmc/alumni.



Summer is slipping between our fingers, and I hope alumni near and far have enjoyed some rest and relaxation. There has been little downtime for the Alumni Association, however. We started the season with an inspiring JMC commencement and will soon welcome the Class of 2015 with the “White Coat Ceremony.” We celebrated our first ever “Jeff at the Beach” reception and are feverishly planning for this fall’s Alumni Weekend, which will be here before we know it.

I am starting my second year of a two-year term and must thank everyone involved from the alumni office to the University leadership to the Jefferson Foundation for making my first year a great one. I want to thank all of you, too – I’ve gotten some terrific feedback and sense a new excitement among alumni. Let’s make this another tremendous year for the JMC Alumni Association. Don’t forget to write!

George Valko, MD ’86
President, JMC Alumni Association

DON’T MISS

T • H • E B • O • A • T

JOIN US IN CELEBRATING THE 25TH ANNIVERSARY OF THE JEFFERSON EMERGENCY RESIDENCY PROGRAM

SATURDAY, SEPTEMBER 17, 2011
THE SPIRIT OF PHILADELPHIA
401 S. COLUMBUS BLVD., PHILADELPHIA
BOARDING AT 6 P.M.

ENJOY A RECEPTION, DINNER AND PROGRAM RECOGNIZING HONOREE DR. JOSEPH A. ZECCARDI.
ENTERTAINMENT, DANCING AND SILENT AUCTION TO FOLLOW. OPTIONAL MORNING CME PROGRAM.

FOR MORE INFORMATION, CALL DR. THEODORE A. CHRISTOPHER OR DR. BERNARD L. LOPEZ AT 215-955-9837.

Alumni Profile

Col. Harlan M. Walker II, MD '00: Protecting Patients in the Air and Under the Sea

Patients come to Harlan Walker with the same complaints they would take to any other family practitioner: aches and pains, coughs and colds, cuts and bruises. But he treats them much differently.

Walker, MD '00, MPH, a colonel in the U.S. Army, is the Special Operations Command Clinic commander at MacDill Air Force Base outside Tampa, Fla. An aerospace and dive medicine specialist, he cares for people whose "offices" are in the air or under water, posing dangers related to altitude, noise and water or atmospheric pressure.

"Say I see someone with severe sinus congestion," said Walker. "If that patient has a desk job, I might prescribe a medication that causes drowsiness. But I'm more likely dealing with an F-16 pilot, so drowsiness is not an option. I have to treat creatively to make this person better as soon as possible without giving anything that might affect his central or peripheral nervous system."

Walker's military career began out of high school, but his medical work started much later. He enrolled at Jefferson at age 38 after losing several loved ones to illness in a brief time.

"During all these instances with sick or injured friends and family members, I felt

impotent and marginalized. I wanted to learn how to help, even though I knew it meant starting over at the bottom rung after experience managing 5,000-person organizations."

A 1980 graduate of the U.S. Military Academy at West Point, Walker gained his management experience while leading an instructor pilot training program for seven years while on active duty.

"My job was to teach others how to teach others to fly," Walker said.

In 1987, he left active duty for a similar position with the California Army National Guard. In addition to his teaching and administrative duties, he led a helicopter battalion that responded across five western states to emergencies, including the earthquake that struck San Francisco during the 1989 World Series. He and his team transported survivor search groups, firefighters and reconstruction workers around the city and even served as mail carriers following the disaster.

Walker came to Jefferson on an Army scholarship in 1996. After graduation, he served an aerospace medicine internship before heading overseas as a combat flight surgeon. During the U.S. invasion of Iraq in 2003, he was the first physician to arrive at Balad Air Base, just

north of Baghdad, where he found fulfillment in his interactions with Iraqi civilians.

"My first day there, I was approached by a local family with a boy who had shrapnel lodged in his chest. Caring for him evolved into caring for the entire extended family over the year we were at that site. I was just happy to help," Walker said. While in Iraq, he also spearheaded the construction of a medical clinic in the small town of Yathrib, where health care was previously delivered out of rudimentary adobe huts.

Today, at MacDill, Walker continues to participate in the same activities as the troops he treats; when they dive, fly or parachute during training, he dives, flies or parachutes right alongside them. His aerospace medicine board certification also allows him the "great privilege" of being involved with space shuttle missions, providing medical support at launches and landings.

"I never would have gone into medicine if it meant I had to give up flying," he said. "I have a career that allows me to be both a pilot and physician – it's the best of both worlds."



InMemoriam

'44S

Sheldon B. Goldstone, 90, of Naples, Fla., died Dec. 6. Goldstone maintained a dermatology practice in Scranton, Pa., until his retirement in 2003. He also taught at the University of Pennsylvania. Goldstone is survived by his son, **Andrew C. Goldstone, MD '85**.

'55

John McCarthy, 83, of Lighthouse Point, Fla., died July 22 following a long illness. He practiced ophthalmology. McCarthy is survived by his wife, Elizabeth.

'56

James P. Boland, 81, died April 5 at his home in of Charleston, W.V. Boland served in the Navy on the U.S. FDR from 1956–1960 and remained in the reserves until 1996. He completed his cardiothoracic surgery fellowship at Parkland Hospital in Dallas in 1963, caring for Gov. John Connally Jr. after he was shot during the assassination of President John F. Kennedy. Boland founded the surgery department and surgical residency program at West Virginia University, Charleston Division. He also traveled abroad extensively to set up surgical training programs. He is survived by his wife, Kathryn; his brother; six children; and nine grandchildren.

Loyal Jefferson Supporter Dies

Valla Amsterdam, known for her intellectual curiosity and her philanthropic generosity, died Feb. 17 at the age of 100. She was one of Thomas Jefferson University's most loyal supporters.

Mrs. Amsterdam became connected to Jefferson through her husband, Gustave, a founding board member of Comcast Corp. and chairman and chief executive officer of Bankers Securities Corp. Mr. Amsterdam is one of the longest-serving University board members in Jefferson history, appointed in 1962 and serving until his death in 2001.

After her husband's death in 2001, Mrs. Amsterdam established the Gustave and Valla Amsterdam Professorship in Family and Community Medicine at JMC and named a classroom in the Dorrance H. Hamilton Building. She also took great interest in the empathy research conducted by Jefferson's Center for Research in Medical Education and Health Care.

Mrs. Amsterdam is survived by a son, Anthony G. Amsterdam, a former MacArthur Fellow who is a professor of international renown at New York University School of Law.



Valla Amsterdam with the first recipient of the Gustave and Valla Amsterdam Professorship in Family and Community Medicine, George Valko, MD '86.

The Rev. Edward C. Bradley, MD '55: Jefferson Counselor in Residence

The Rev. Edward C. Bradley, MD '55, special counselor to Jefferson faculty, staff and students, died June 8 at age 82.

Born in Philadelphia, Bradley was a U.S. Navy veteran and served on the faculty of the University of Southern California in the 1960s and 1970s. While working at USC, he learned of a Jesuit priest in Vietnam who needed medical assistance and left to open clinics in two Vietnamese villages, where he focused on treating polio and tuberculosis. Bradley successfully appealed to President Richard Nixon for supplies and personnel to inoculate 8,000 villagers; follow-up studies showed that his efforts helped to eradicate polio in the region.

Bradley moved in 1974 to enter a Jesuit seminary in Berks County, Pa., and joined the faculty at JMC the following year. In 1977, he left Philadelphia to continue his studies at the Jesuit School of Theology in Berkeley, Calif. He was ordained as a Jesuit priest the month before his 51st birthday.

In 1981, he opened a medical practice for the poor in North Philadelphia and rejoined the faculty at Jefferson, working as a clinical associate professor of medicine until his retirement in 2007. After retiring, he continued to serve as a beloved counselor to the Jefferson community.

Bradley's portrait was presented to the University by the JMC Class of 1991. He is survived by cousins.



Celebrate THE ACHIEVEMENTS OF Women IN MEDICINE

CONTRIBUTE TO JEFFERSON'S 1961 FUND TODAY

The 1961 Fund

was established in honor of the 50th anniversary of female students at JMC. The fund will be endowed and the income will be used at the discretion of the dean of Jefferson Medical College to provide support for the professional development of female JMC faculty and students. Honor the advances of women in medicine by giving to the 1961 Fund today!

Visit www.jefferson.edu/jeffgiving or call 215-955-6620.



Alumni Weekend '11

SEPTEMBER 23, 24 AND 25, 2011

Friday, Sept. 23

- CME program: Focus on Women's Health
- Welcome reception at the Pennsylvania Academy of the Fine Arts, featuring a private viewing of the newly restored *The Gross Clinic* by Thomas Eakins
- Presentation of the Alumni Achievement Award

Saturday, Sept. 24

- Taste of Philadelphia luncheon hosted by Jefferson Medical College Dean Mark L. Tykocinski, MD
- Campus tours
- Reception and dinner for each reunion class at the Loews Philadelphia Hotel
- Entertainment for all by The Mahoney Brothers' *Jukebox Heroes Live*, "the world's greatest musical impersonation show!"

NEW Sunday, Sept. 25

- Brunch and silent auction at the Ritz-Carlton Hotel Philadelphia, hosted by the 50 & Forward Steering Committee celebrating 50 years of female students at Jefferson Medical College

For information, call toll-free 1-877-JEFF-GIFT
or email events@jefferson.edu

Visit our website for detailed information:

www.jefferson.edu/jmc/alumni

Register for the CME at <http://jeffline.jefferson.edu/jeffcme>.

The pictures at the top and far left were taken during Alumni Weekend five years ago. The pictures at bottom center and right were taken last year.



By THE Numbers

Student Matches

As of March, 247 graduating students had matched in 27 specialties; 195 will undertake their residency training at university hospitals and 89 will remain in Pennsylvania. Almost a third of the students – 74 – will stay in the Jefferson community, matching with Thomas Jefferson University Hospital or an affiliate.

As usual, subspecialties in internal medicine proved the most popular this year. Emergency medicine and family medicine switched places from last year to this, while orthopaedic surgery moved from 13th most popular in 2010 to 7th this year.

SPECIALTIES

56 Internal Medicine (Categorical)	4 Neurosurgery
23 Emergency Medicine	3 Otolaryngology
20 Family Medicine	3 Physical Medicine & Rehabilitation
20 Pediatrics	3 Urology
19 Surgery (Categorical)	2 Medicine (Preliminary)
16 Anesthesiology	2 Medicine/Pediatrics Combined
14 Orthopaedic Surgery	2 Pediatrics – Primary Care Tract
14 Psychiatry	2 Surgery (Preliminary)
9 Obstetrics/Gynecology	1 Emergency/Internal Medicine Combined
9 Ophthalmology	1 Internal Medicine – Primary Care Tract
6 Pathology	1 Oral Maxillofacial Surgery
6 Radiology-Diagnostic	1 Peds/Pmr Combined
5 Dermatology	1 Vascular Surgery
5 Neurology	

